

LITHUANIAN UNIVERSITY OF HEALTH SCIENCES

ENTRANCE EXAMINATION TEST

EXAMPLE

Name

Applying to the Faculty

Place of Examination (City)

Date

Academic Year XXXX/XXXX

BIOLOGY

- The diploid state is maintained from one generation to the other in mammals by:
 - Mitosis
 - Meiosis
 - Mitosis and fertilization
 - Meiosis and fertilization
- Mixing of genetic materials from different sources is realized by:
 - Binary fission
 - Budding
 - Sexual reproduction
 - Sporulation
- The study of fishes is referred to as:
 - Mammalogy
 - Ornithology
 - Herpetology
 - Ichthyology
- A person with Type A blood may safely receive a transfusion of
 - Type AB
 - Type A and AB
 - Type AB and Type O
 - Type A and Type O
 - none of these
- Mammals are:
 - Egg laying animals
 - Oviparous
 - Ovoviparous
 - Viviparous
- RNA is found in
 - the nucleus only
 - the cytoplasm only
 - both the nucleus and the cytoplasm
 - proteins
 - amino acids

7. Mutations do not affect evolutionary change primarily because they are:
- A. Expressed
 - B. Recessive
 - C. Too rare
 - D. Random
8. During mitosis the chromosomes divide into two equal identical sets in the:
- A. Prophase
 - B. Metaphase
 - C. Anaphase
 - D. Interphase
 - E. Telophase
9. The genetic code is composed of a sequence of:
- A. Three nucleotides
 - B. Three nucleosides
 - C. Three amino acids
 - D. Two amino acids
10. Human ovulation ordinarily occurs near what day in the menstrual cycle:
- A. 1st
 - B. 4th
 - C. 8th
 - D. 14th
 - E. 20th
11. Among the defense mechanisms available to humans to ward off their destruction by the environment is (are):
- A. Skin
 - B. White blood cells
 - C. Antibodies
 - D. Sebaceous secretions
 - E. All of the above
12. Man can be infected by trichinosis by:
- A. Drinking unpasteurized milk
 - B. Cutting himself while dressing wild game
 - C. Eating raw fish
 - D. Eating poorly cooked pork
 - E. Eating poorly cooked beef

13. A diploid cell undergoing meiosis in the testis gives rise to mature sperms:
- A. One
 - B. Two
 - C. Three
 - D. Four
 - E. Five
14. Natural selection results in:
- A. Increased favorable gene combination
 - B. Decreased unfavorable gene combination
 - C. Both
 - D. Neither
15. All of the following statements about white blood cells are true except
- A. they are formed in lymph glands
 - B. they are formed in bone marrow
 - C. they move like paramecia
 - D. they destroy bacteria
 - E. they have a nucleus
16. The metal existing in hemoglobin is:
- A. Iron
 - B. Magnesium
 - C. Potassium
 - D. Sodium
17. The elements which are always present in any protein are:
- A. C, H, O
 - B. C, H, O, S
 - C. C, H, O, P
 - D. C, H, O, N
18. When the number of chromosomes is 13 in an animal, then the number of chromosomes is:
- A. 26 in somatic cells
 - B. 13 in body cells
 - C. 13 in sexual gametes
 - D. (A) and (B) are correct
 - E. (A) and (C) are correct

19. Ornithology is the study of:
- A. Birds
 - B. Single-celled animals
 - C. Reptiles and amphibians
 - D. Fishes
20. Chemical energy is liberated intracellularly by the:
- A. Dictyosomes
 - B. Mitochondria
 - C. Leucoplasts
 - D. Centrioles
21.
22.
-
30.

CHEMISTRY

1. The two main parts of an atom are
- A. the principal energy levels and energy sublevels
 - B. nucleus and kernel
 - C. nucleus and energy levels
 - D. planetary electrons and energy levels.
2. If the sharing of an electron pair is unequal, what is this sharing called?
- A. ionic
 - B. covalent
 - C. polar covalent
 - D. coordinate covalent
 - E. van der Waals forces
3. Which of the following statements is correct?
- A. S^- is the conjugate acid of H_2S
 - B. HS^- is the conjugate base of H_2S
 - C. HS^- is the conjugate base of S^-
 - D. HS^- is the conjugate acid of H_2S
4. Calcium carbide reacts with water to produce
- A. carbon dioxide
 - B. methane
 - C. carbohydrate
 - D. acetylene
 - E. ethylene

5. An increase in concentration
- A. is related to the number of collisions directly
 - B. is related to the number of collisions inversely
 - C. has no effect on the number of collisions.
6. If 1 gram of each of the following compounds were converted into its constituent atoms, which would give the least amount of hydrogen?
- A. water
 - B. ethane
 - C. ethene
 - D. hydrochloric acid
7. The electrons comprising an electron pair differ with respect to
- A. orbital (magnetic quantum number).
 - B. shell (principal quantum number).
 - C. azimuthal quantum number.
 - D. spin.
8. In the reaction, $\text{Br}_2 + 2\text{KI} \rightarrow 2\text{KBr} + \text{I}_2$, the oxidizing agent is
- A. Br_2
 - B. KI
 - C. KBr
 - D. I_2
 - E. I^-
9. How many grams of oxygen are in 4.0 g of acetone, $\text{C}_3\text{H}_6\text{O}$ (atomic weights are: H=1.0, C=12.0, O=16.0)?
- A. 1.10
 - B. 0.06
 - C. 2.20
 - D. 0.90
10. Which of the following statements is true?
- A. A catalyst cannot lower the activation energy.
 - B. A catalyst can lower the activation energy.
 - C. A catalyst affects only the activation energy of the forward reaction.
 - D. A catalyst affects only the activation energy of the reverse reaction.
 - E. A catalyst is permanently changed after the activation energy is achieved.

11. In general, when metal oxides react with water, they form solutions that are

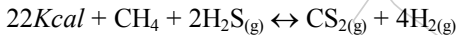
- A. acidic
- B. basic
- C. neutral
- D. unstable
- E. colored

12. $\text{MnO}_2 + \text{HCl} \rightarrow \text{MnCl}_2 + \text{Cl}_2 + \text{H}_2\text{O}$

The balancing coefficient numbers are respectively

- A. 1, 4, 1, 1, and 1
- B. 2, 8, 2, 2, and 2
- C. 1, 4, 1, 1, and 2
- D. 1, 2, 1, 1, and 2

13. Consider the following system at equilibrium:



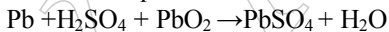
How will the equilibrium shift if $\text{H}_2\text{S}_{(\text{g})}$ is removed (g = gas)?

- A. to the left
- B. to the right
- C. no effect
- D. a decrease in temperature

14. The anhydride of nitrous acid, HNO_2 , is

- A. HNO
- B. N_2O_3
- C. NO_2
- D. NO
- E. nonexistent

15. When the equation

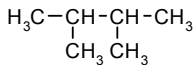


is balanced, the ratio of atoms of Pb to molecules of H_2SO_4 is

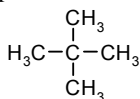
- A. 1:2.
- B. 1:1.
- C. 2:1.
- D. 2:3.
- E. 3:2.

16. Which of the following hydrocarbons is incorrectly named?

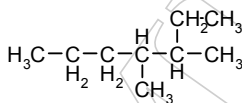
A. 2, 3-Dimethylbutane



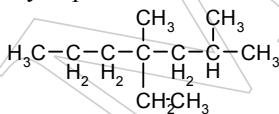
B. 2, 2-Dimethylpropane



C. 2-Ethyl-3-methylhexane



D. 2, 4-Dimethyl-4-ethylheptane



E. Compounds A, B, C and D are all correctly named

17. What is the pH of an acetic acid solution if the $[\text{H}_3\text{O}^+] = 1 \times 10^{-4}$ mole/liter?

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5

18. A molecule possessing NH_2 and COOH groups is classified as a (an)

- A. glycerol.
- B. protein.
- C. amino acid.
- D. carbohydrate.
- E. fat.

19. Compounds in which ionic bonding predominates have liquid forms characterized by
- A. a low freezing point and slight electrical conductivity
 - B. a low freezing point and good electrical conductivity
 - C. a high freezing point and slight electrical conductivity
 - D. a high freezing point and good electrical conductivity
20. The most probable valence of an element with the electronic distribution of $1s^2 2s^2 2p^6 3s^2 3p^1$ is
- A. +1
 - B. +2
 - C. +3
 - D. -1
 - E. -3
21.
22.
-
30.